

REMARKS

This paper is filed in response to the Office Action mailed on August 23, 2006. Currently, Claims 1-21 are pending in the application. Claims 1-21 have been examined and stand rejected. Claim 1 has been amended to include the limitation of Claim 2. Because Claims 1 and 2 have already been examined, the amendment is in compliance with 37 C.F.R. § 1.116. Accordingly, reconsideration of Claims 1 and 3-21 is proper and is respectfully requested.

The Rejection of Claims 1-12 and 13-21 Under 35 U.S.C. § 103(a)

Claims 1-12 and 13-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kamayachi et al. (U.S. Patent No. 4,943,516) in view of applicants' admitted prior art ("AAPA").

Claims 1, 4, and 7 share a common step of "irradiating a laser beam to the laminated thermosetting film according to a solder resist mask pattern to selectively remove the thermosetting film." Claims 13, 16, and 19 share a common step of "irradiating a laser beam on the thermoset film to selectively remove the film to provide a solder resist pattern."

In rejecting the claims, the Examiner appears to have failed to consider all the claim limitations, because nowhere do any of the references teach or suggest that a laser beam is irradiated to the laminated thermosetting film according to a solder resist mask pattern to selectively remove the thermosetting film, as recited in Claims 1, 4, and 7, or to selectively remove the thermoset film to provide a solder resist pattern, as recited in Claims 13, 16, and 19.

In rejecting the claims in view of Kamayachi et al., the Examiner cites Col. 15, line 67, through Col. 16, line 31. In that passage, Kamayachi et al. teaches that "[b]y subjecting the photosensitive thermosetting resin composition to a process of coating, exposing to the actinic radiation, developing, and then post-curing, there can be formed a solder resist pattern excelling in adhesion, etc., . . ." It is evident that Kamayachi et al. refers to using a laser beam to expose the coating to harden it, followed by developing, which washes away the unexposed portion.

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Consequently, Kamayachi et al. does not teach that the laser beam *removes* the coating. At most, Kamayachi et al. only teaches using a laser beam for exposing, not for the purpose of *removing*. One of the requirements of a *prima facie* rejection is that the references teach or suggest all the claim limitations. The Examiner has failed to show how or why Kamayachi et al. irradiates a laser beam to the laminated thermosetting film according to a solder resist mask pattern to selectively *remove* the thermosetting film, as recited in Claims 1, 4, and 7, or why Kamayachi et al. teaches or suggests irradiating a laser beam on the thermoset film to selectively *remove* the thermoset film to provide a solder resist pattern, as recited in Claims 13, 16, and 19.

Accordingly, the withdrawal of the rejection is respectfully requested.

The Rejection of Claims 1-12 and 13-21 Under 35 U.S.C. § 103(a)

Claims 1-12 and 13-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Urasaki et al. (U.S. Patent No. 5,879,568) in view of applicants' admitted prior art ("AAPA").

In rejecting the claims under Urasaki et al., the Examiner states that Urasaki et al.'s "teaching of forming via holes by irradiating laser beam to the thermosetting resin film is nothing but selectively removing the film with the laser beam irradiation." Applicants respectfully submit that the Examiner has failed to give the claims their plain and ordinary meaning. The Examiner stating that forming via holes by irradiating a laser beam to the thermosetting resin film meets the claim limitation of "irradiating a laser beam to the laminated thermosetting film according to a solder resist mask pattern to selectively remove the thermosetting film" of Claims 1, 4, and 7 and "irradiating a laser beam on the thermoset film to selectively remove the thermoset film to provide a solder resist pattern" of Claims 13, 16, and 19 is without any technical basis, because the purpose of Urasaki et al. is not to provide a solder resist pattern.

The Examiner states that the above limitations are disclosed in Urasaki et al. at Col. 7, lines 50-58, and Col. 9, line 49, through Col. 10, line 57. In careful reading of these passages Urasaki et al. never teaches the use of a laser beam to selectively remove resin according to a

solder resist mask pattern. Urasaki et al. describes that the cured thermosetting resin layer 2 exposed from the openings 4 of the copper foil was irradiated with carbon dioxide laser beams to remove the resin layer until the circuit conductors in the interlayer board were exposed, thereby forming the via holes 5 as shown in FIG. 1D. Thus, referring to Figures 1C and 1D, it is evident that Urasaki et al. only teaches the use of laser beams to provide via holes in layer 2, which functions as an insulator, not for use in removing resin according to a solder resist mask pattern. Neither does Urasaki et al. provide a solder resist mask pattern by irradiating a laser beam. Again, in Col. 10, lines 17-25, and with reference to Figures 1F, 1G, and 1H, Urasaki et al. teaches the use of laser beams for removing resin layers 7, which function as insulators, not as a solder resist mask, to form via holes 10. Furthermore, the Examiner has not explained how or why the removal of resin layers 2 or 7 to provide via holes is done according to a solder resist mask pattern or provides a solder resist mask pattern, since after removing the layers 2 and 7, the surfaces of the workpiece are left with copper foil as the outermost layer, other than where the laser beam has exposed an underlying copper connection. The Examiner's reasoning is therefore flawed because the Examiner has failed to explain how after irradiating, the copper foil or any layer functions as a solder resist.

Furthermore, the only teaching in Urasaki et al. of forming a "solder resist" is described in connection with Figure 2. At Col. 10, lines 27-31, Urasaki et al. simply states "a solder resist 16 was formed and electroless nickel plating was carried out on the bonding pads with a plating solution." However, Urasaki et al. does not state that a laser beam is irradiated to form the solder resist 16. Accordingly, the only teaching of solder resist in Urasaki et al. is silent with respect to using a laser beam. Consequently, while Urasaki et al. may teach the use of laser beams for the removal of resin layers for the purpose of forming via holes in insulators, such disclosure is not sufficient to render claims obvious for the reasons discussed above.

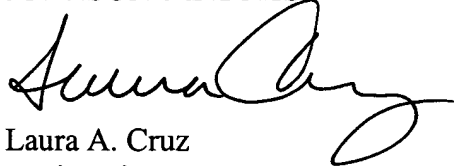
Accordingly, the withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the foregoing remarks, applicants submit that Claims 1 and 3-21 are allowable. Accordingly, a Notice of Allowance is respectfully requested. If the Examiner has any further questions or comments, the Examiner may contact the applicants' attorney at the number provided below.

Respectfully submitted,

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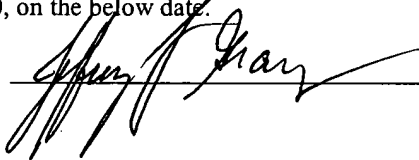
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Date:

November 22, 2006



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